



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,427	10/18/2005	Masafumi Yokoyama	01165.0948	1407

7590 08/21/2008  
Ernest F. Chapman  
Finnegan Henderson Farabow Garrett & Dunner  
901 New York Avenue N W  
Washington, DC 20001-4413

EXAMINER

SARPONG, AKWASI

ART UNIT

PAPER NUMBER

2625

MAIL DATE

DELIVERY MODE

08/21/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/553,427

**Applicant(s)**

YOKOYAMA ET AL.

**Examiner**

AKWASI M. SARPONG

**Art Unit**

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/18/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/309)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_
- Paper No(s)/Mail Date 10/18/2005

DETAILED ACTION

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being obvious over Watanabe (20030142340) in view of Shiota (4736244).

**Claim I**, Watanabe discloses an exposure apparatus (**Fig. 2 shows a printer and Copying machine**) comprising:

temperature detector for detecting an ambient temperature a plurality of converters (**LUT shown in Fig. 3A and 3B**) for converting input grayscale data into corrected grayscale data so as to correct for nonlinearity of exposure density. (**Section 0041, thermistor 152 is a temperature detector**)

an exposure member for performing grayscale exposure on a photosensitive material based on said corrected grayscale data (**Section 0042 and 0045, thus the sensors in the image pick up unit 11 sense photos which are either sent in by the scanning or by sending from a computer**).

a selecting member for selecting an appropriate one of said converter in accordance with said ambient temperature detected by said temperature detector, (**Section 0046, Fig. 3A shows clearly that the temperature of the rollers are compared with the ambient to generate the table shown in Fig. 3A and Fig 3B**)

wherein said plurality of converters are set up so that each range of amount of exposure light is divided into substantially equal regions corresponding to a temperature region to be covered by each of said plurality of converter. **(Section 0045, thus all the various sensors outputs temperatures that output a uniform density or equal regions or images)**

Watanabe does explain very clearly how the amount of light is controlled to give an equal density.

Shiota discloses very clearly that the look-up-table converts the grayscale data for an outputting. **(Col. 3 Lines 20-35, Fig. 4, thus the aperture is a means of converting image data before outputting)**. Therefore it will be obvious to one ordinary skilled in the art at the time the invention was made to modify Watanabe's exposure device to include Shiota's aperture controlling means so the amount of light exposed to the image data will be equal and give an even density as disclosed in Col. 6 Lines 15-25.

**Claim 2**, Watanabe in view of Shiota discloses wherein said plurality of converters correct for at least either a change in the amount of exposure light of said exposure member with respect to said detected temperature or a change in sensitivity characteristic of said photosensitive material with respect to said detected temperature. (Watanabe: **Section 0056 and 0057, Fig. 3a and 3b shows clearly that the**

**environment temperature has a changing effect on the time of exposure of the device)**

**Claim 3,** Watanabe in view of Shiota discloses wherein said plurality of converters are set up so that each temperature range to be covered by each of said plurality of converters is divided into regions of unequal width.( **Watanabe: Section 0045, Fig. 3a and 3b shows the range of the is not the same-15-30 is not the same as 35-50)**

**Claim 4,** Watanabe in view of Shiota discloses wherein said plurality of converters is set up so that any converter to be used in a higher temperature region covers a wider temperature range than any converter to be used in a lower temperature region. (**Watanabe: Section 0045, Fig. 3a and 3b shows that the wider the range the higher the temperature i. e. 15-30 has 90 while 35-50 have 90).**

**Claim 5,** Watanabe in view of Shiota discloses an exposure device that further comprising a line light source for exposure, (**Watanabe: Section 0029 exposure lamp is a light source**) and wherein said exposure member is a shutter member (**Watanabe: CCD**) for optically modulating light emerging from said line light source, and said shutter member performs said grayscale exposure on said photosensitive material by optically modulating the light emerging from said line light source while controlling an aperture open time in accordance with said corrected grayscale data supplied from said

converter,( **Watanabe: Section 0029 and 0031, thus the CCD sensor takes the reflected light in the scanner while the photoreceptor drum is also part of the exposure unit**) and wherein  
the aperture open time of said shutter member corresponding to maximum grayscale data is set substantially constant for all of said plurality of converters. (**Watanabe: Section 0039 and 0041, thus the detected temperature and the ambient temperature has effect on the recovery time which is also the same as the time for receiving the image data**)

**Claim 6**, Watanabe in view of Shiota discloses wherein a grayscale data range to be controlled by each of said plurality of converters having a first grayscale range where a relationship between said grayscale data for each of said plurality of converters and the aperture open time of said shutter member matches the grayscale density on said photosensitive material, (**Watanabe: Section 0037, thus as shown in Fig. 3a and 3b they are all different conversion tables**) and a second grayscale range where the relationship between said grayscale data for each of said plurality of converters and said aperture open time does not match the grayscale density on said photosensitive material. (**Watanabe: Section 0041, Fig. 3a and 3b shows different temperature under the sensor material**)

**Claim 7**, - Watanabe in view of Shiota wherein said second grayscale range is a grayscale range where a grayscale value is large. **(Watanabe: Section 0041, Fig. 3 a and b shows that the grayscale range is bigger in a higher temperature)**

**Claim 8**, Watanabe in view of Shiota discloses an exposure apparatus a line light source for exposure **(Watanabe: Section 0029 exposure lamp is a light source)** and a light amount correcter, and wherein said exposure member is a shutter member for optically modulating light emerging from said line light source, said light amount correcter applies a light amount correction to correct for a variation in the amount of said emergent light optically modulated by said shutter member, each of said plurality of converters outputs said corrected grayscale data by nonlinearly correcting the grayscale data corrected by said light amount correcter, **(Watanabe: Section 0029 and 0031, thus the CCD sensor takes the reflected light in the scanner while the photoreceptor drum is also part of the exposure unit)** and said shutter member performs said grayscale exposure on said photosensitive material by optically modulating the light emerging from said line light source while controlling an aperture open time in accordance with said corrected grayscale data supplied from said converter with said light amount correction superimposed thereon, wherein the aperture open time of said shutter member corresponding to maximum grayscale data is set substantially constant for all of said plurality of converter. **(Watanabe: Section 0039 and 0041, thus the detected temperature and the ambient temperature has effect**

**on the recovery time which is also the same as the time for receiving the image data)**

**Claim 9**, Watanabe in view of Shiota discloses wherein a grayscale data range to be controlled by each of said plurality of converters comprises a first grayscale range where a relationship between said grayscale data for each of said plurality of converter **(Watanabe: Section 0037, thus as shown in Fig. 3a and 3b they are all different conversion tables)** and the aperture open time of said shutter member matches grayscale density on said photosensitive material, and a second grayscale range where the relationship between said grayscale data for each of said plurality of converter and said aperture open time does not match the grayscale density on said photosensitive material. **(Watanabe: Section 0041, Fig. 3a and 3b shows different temperature under the sensor material)**

**Claim 10**, Watanabe in view of Shiota discloses wherein said second grayscale range is a grayscale range where a grayscale value is large. **(Watanabe: Section 0041, Fig. 3 a and b shows that the grayscale range is bigger in a higher temperature)**



**Claim 11**, Watanabe in view of Shiota discloses an exposure apparatus that further comprising: a light source for exposure, **(Watanabe: Section 0029 exposure lamp is a light source)** and wherein said exposure member is a shutter member for optically modulating light emerging from said light source **(Watanabe: Section 0029 and 0031, thus the CCD sensor takes the reflected light in the scanner while the photoreceptor drum is also part of the exposure unit)** and said shutter member performs said grayscale exposure on said photosensitive material by optically modulating the light emerging from said light source while controlling an aperture open time in accordance with said corrected grayscale data supplied from said converter, and wherein a print time per unit area is set substantially constant for all of said plurality of converters. **(Watanabe: Section 0039 and 0041, thus the detected temperature and the ambient temperature has effect on the recovery time which is also the same as the time for receiving the image data)**

**Claim 12**, Watanabe in view of Shiota discloses wherein said print time per unit area is the time required to print one line on said photosensitive material. **(Watanabe: Section 0044, thus the recovery time is the period it takes for the machine to come back from sleep mode and therefore it has effect on how fast the printer will be. )**

**Claim 13**, Watanabe in view of Shiota discloses wherein said print time required to print one line includes a mask time for performing data transfer and the like and a maximum grayscale aperture open time of said shutter member corresponding to maximum grayscale data. **(Watanabe: Section 0046, thus the comparison time for the machine to recover shows how fast the sensor or shutter takes in to the system).**

**Claim 14**, Watanabe in view of Shiota discloses wherein said print time required to print one line is the sum of said mask time and a maximum aperture open time which is the longest maximum grayscale aperture open time of all the maximum grayscale aperture open times defined by said converter. **(Watanabe: Section 0046, thus the comparison time for the machine to recover shows how fast the sensor or shutter takes in to the system).**

**Claim 15**, Watanabe in view of Shiota discloses wherein said mask time is varied among said plurality of converters so that said print time required to print one line becomes substantially constant for all of said plurality of converter. **(Watanabe: Section 0051 and 0052 thus the internal time for the printer to process the image data is the same or a constant speed in relation to the process).**

**Claim 16**, Watanabe in view of Shiota discloses wherein said mask time is held constant for each of said plurality of converter, and a grayscale aperture close time is provided in addition to said maximum grayscale aperture open time so that said print time required to print one line becomes substantially constant for all of said plurality of converter. **(Watanabe: Section 0051 and 0052 thus the internal time for the printer to process the image data is the same or a constant speed in relation to the process).**

**Claim 17**, Watanabe in view of Shiota discloses wherein said grayscale aperture close time is equal to a time difference between said maximum aperture open time and said maximum grayscale aperture open time in each of said plurality of converters. **(Watanabe: Section 0079 and 0080, thus the comparison of different times help in stabling the temperatures)**

**Claim 18**, Watanabe in view of Shiota discloses wherein said mask time is held constant for each of said plurality of converter, and said maximum grayscale aperture open time is set approximately equal to said maximum aperture open time. **(Watanabe: Section 0051 and 0052 thus the internal time for the printer to process the image data is the same or a constant speed in relation to the process).**

**Claim 19**, Watanabe in view of Shiota discloses wherein a grayscale data range to be controlled by each of said plurality of converter comprises a first grayscale range where a relationship between said grayscale data for each of said plurality of converter and the aperture open time of said shutter member substantially matches grayscale density on said photosensitive material, **(Watanabe: Section 0037, thus as shown in Fig. 3a and 3b they are all different conversion tables)** and a second grayscale range where the relationship between said grayscale data for each of said plurality of converter and said aperture open time does not match the grayscale density on said photosensitive material. **(Watanabe: Section 0041, Fig. 3a and 3b shows different temperature under the sensor material)**

**Claim 20**, Watanabe in view of Shiota wherein said second grayscale range is a grayscale range where a grayscale value is large. **(Watanabe: Section 0041, Fig. 3a and b shows that the grayscale range is bigger in a higher temperature)**

**Claim 21**, Watanabe in view of Shiota discloses an exposure apparatus wherein a light source for exposure **(Watanabe: Section 0029 exposure lamp is a light source)** and a light amount corrector, and wherein said exposure member is a shutter member for optically modulating light emerging from said light source, said light amount corrector applies a light amount correction to correct for a variation in the amount of said emergent light optically modulated by said shutter member, each of said plurality of

converter outputs said corrected grayscale data by nonlinearly correcting the grayscale data, such as image data, corrected by said light amount correcter, (Watanabe: **Section 0029 and 0031, thus the CCD sensor takes the reflected light in the scanner while the photoreceptor drum is also part of the exposure unit)** and

said shutter member performs said grayscale exposure on said photosensitive material by optically modulating the light emerging from said line light source while controlling an aperture open time in accordance with said corrected grayscale data supplied from said plurality of converter with said light amount correction superimposed thereon, (Watanabe: **Section 0039 and 0041, thus the detected temperature and the ambient temperature has effect on the recovery time which is also the same as the time for receiving the image data)**

wherein a mask time is held constant for each of said plurality of converters, and a maximum grayscale aperture open time in each of said plurality of converters is set approximately equal to a maximum aperture open time so that a print time required to print one line becomes substantially constant for all of said plurality of converters. (Watanabe: **Section 0046, thus the comparison time for the machine to recover shows how fast the sensor or shutter takes in to the system).**

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AKWASI M. SARPONG whose telephone number is (571)270-3438. The examiner can normally be reached on Monday-Friday 8:00am-5:00pm est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on 571-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/King Y. Poon/  
Supervisory Patent Examiner, Art Unit 2625

AMS  
08/14/2008

